Forest Health Protection
Regions 1 and 4

INVASIVE PLANTS BIOLOGICAL CONTROL STRATEGY



Introduction

Invasive species are one of the major threats to the Nation's forests and grasslands. In the Northern and Intermountain Regions (Regions 1 and 4), thousands of acres are newly infested annually by non-native invasive plants. These non-native invasive plants threaten the ecological integrity and biological diversity of our forest and range ecosystems. Biological control shows the most promise as a viable long-term approach to managing non-native invasive plants.

This strategic plan describes the role and response of Regions 1 and 4 Forest Health Protection (FHP) to the threat of non-native invasive plants. The strategy's purpose is to:

- Communicate FHP roles and responsibilities in biological control to our partners.
- Implement invasive plant strategies and plans by providing expertise in biological control.
- Understand the needs of FHP and cooperators to provide information to Federal, state, and private land owners.
- Focus an appropriate proportion of our resources (up to 20 percent) on biological control efforts, based on the programmatic capabilities and capacities of each field office.
- Provide Regions 1 and 4 leadership parameters to annually monitor progress and success in the goals of this strategy.

Action Plan

The overall FHP strategy directs that approximately 20 percent of available FHP efforts will continue to focus in non-native species management. This invasive plant biological control strategic plan provides overall direction for the program and is supplemented by an Action Plan. The Action Plan defines yearly program of work priorities, specific actions to implement the strategy, and measures to evaluate our accomplishments. The strategy team will draft the Action Plan no later than May 1 yearly and propose criteria and priorities for biological control work over the coming year.

Role of Forest Health Protection

FHP's entomological expertise is critical to the development and implementation of biological control programs. Using insects and pathogens as biological control agents provides personnel in FHP a unique opportunity to participate in one Chief's 4 threats. With FHP's position in State and Private Forestry, we are uniquely qualified to serve as a bridge providing key information and services to those involved with weed management of federal, tribal, state and private lands. Regions 1 and 4 FHP entomologists and pathologists have been very active and successful in thedevelopment of a program of work in the area of biological control of invasive plants over the past several years, in some cases contributing nearly 20 percent of their time annually to this program of work. It is anticipated this need will continue to increase as non-native invasive plants continue to spread throughout the west.

FHP will work with cooperators to achieve efficient and effective biological control programs to manage non-native invasive plants and improve ecosystem health across all land ownerships. FHP participation emphasizes developing and implementing biological control and programs and developing new technologies in collaboration with research and land managers.

Program Goals

The program goals of Regions 1 and 4 FHP invasive plants biological control strategy focus on integrating six emphasis areas that will develop successful integrated weed management strategies with all interested cooperators. These emphasis areas are: coordination, technology development, education & technology transfer, functional assistance, research and monitoring. The strategic actions written for each goal reflect recommendations provided by the Washington Office FHP 2003 field review.

Coordination

Goal: FHP Staff will coordinate and collaborate with Federal agencies, State and local governments, universities and private interests to develop and assist in implementing biological control programs to manage invasive plants. Biological control programs will be incorporated into more efficient and effective region-wide integrated weed management strategies.

Establishing strong collaboration links between various cooperators is critical to successfully implement biological control strategies in an integrated weed management program. Coordinated efforts ensure that weed management strategies are ecologically appropriate, economically feasible, timely, compatible and effective in achieving desired objectives across all land ownerships. Collaboration helps minimize potential problems procuring, establishing and monitoring biological control agents. Collaboration provides an avenue for sharing knowledge and expertise to incorporate biological control into integrated weed management.

Strategic Action: FHP will assist in coordinating the following emphasis items

- Identify and establish communications with cooperators regarding the development of an efficient and effective invasive plant management program.
- Participate at Federal, State and local invasive plant management meetings.
- Facilitate the use and linkage of existing databases to catalog current biological control weed projects, release information, insectaries, research plots and monitoring results.
- Work with regional networks to ensure priority biological control issues affecting all cooperators are identified and land management treatments are implemented based on region-wide invasive plant management plans.
- Produce an electronic mailing list for regional field offices and cooperators to ensure current invasives-related information is well disseminated.
- Serve as a liaison between land managers and researchers.
- Organize and host an annual planning meeting

Technology Development

> *Goal: FHP Staff, in cooperation with practitioners and research, will develop tools for land managers to implement efficient biological control strategies and enhance weed management programs.*

The development of new biological control technologies relies on cooperative efforts of researchers and land managers. While weed management priorities vary across the Regions, often the same species of non-native invasive plants are important for many land managers. Coordinating new technologies with neighboring landowners is essential in developing and evaluating monitoring systems for non-native invasive plant species.

FHP can offer technical support from entomologists, pathologists and technicians to assist in the development of the new technologies for biological control programs. FHP will focus on several areas of emphasis in technology development, including land manager friendly monitoring systems, insectary establishment guidelines and introduction of new agents in the field.

Strategic Actions: In conjunction with research, FHP will facilitate efforts needed to address new and existing biological control agents

- Develop monitoring protocols, procedures and guidelines to effectively sample and evaluate established biological control agents.
- Develop guidelines to identify preferred site characteristics for biological control agent releases and collections.
- Develop procedures to identify when a biological control agent has reached sustainable populations for redistribution at an operational level.
- Determine the minimum number of biological control agents required to establish a viable population for a particular weed species on an infested landscape.
- Develop procedures to identify impacts of agents on weed populations.
- Develop procedures that measure change in the target weed species and vegetative response over time and across the landscape due to biological control agents.
- Develop procedures to propagate bio-control agents in the field.

Education & Technology Transfer

> *Goal: FHP Staff, in cooperation with our partners, will develop and deliver educational messages, materials, programs and technologies on biological control of non-native invasive plants for all user groups.*

Education is a key component of a successful biological control program. As new information about biological control and weed management becomes available, education and outreach opportunities will increase. FHP will engage in educational outreach activities to increase awareness of non-native invasive plants and biological control. These efforts will assist in increasing public support and understanding of the threat non native invasive plants pose and how biological control agents may provide an effective approach in the management of these plants.

Strategic Actions: FHP will develop and deliver educational materials and programs for all user groups and the public. Educational outreach activities will include:

- Cooperate and coordinate with local, state, federal and other groups to develop educational materials and programs to increase public awareness of invasive plant issues, including:
  - identification and biology of non-native invasives and biological control agents
  - selection of release sites
  - collection, handling and release of biological control agents
  - monitoring biological control agent establishment, impact and effectiveness
  - establishing and maintaining biological control databases
  - National Environmental Policy Act process and requirements

- Deliver education programs, workshops and informational meetings that focus on invasive weeds and the use of biological control agents in an integrated weed management program.

- Disseminate information on biological control and non-native invasive plants in school curricula and to various media outlets.

- Communicate with public officials and legislators at all levels of government when appropriate to help disseminate accurate and timely information concerning invasive weeds and biological control.

- Design, develop and implement a public awareness program defining FHP's role in invasive plant management and interest in collaborating to develop weed management strategies and programs.

- Provide professional development opportunities to enhance the technical expertise of biological control and weed management specialists.

- Continue to identify and highlight educational materials on the website and provide timely updates.

- Design, develop and implement an invasives biological control training program in collaboration with universities and research organizations.

Functional Assistance

Goal: FHP Staff will provide technical assistance and support to all agencies, cooperators and the public to implement biological control strategy as part of an integrated weed management strategy.

Functional assistance builds strong partnerships between practitioners and cooperators and contributes to implementing new technologies in the field. Technical assistance interactions between FHP and cooperators allows exchanging information on biological control agents, identifies areas requiring improvements and provides information on current advances. Integrated weed management programs will be enhanced over time as more cooperators are provided with technical assistance.

Strategic Actions: FHP will provide technical assistance in the following areas:

- Gather appropriate information during site visits to make assessments and evaluations and develop appropriate recommendations.

- Provide technical information needed to assist with the implementation of biological control strategies.

- Identify biological control agent sources to assist with procurement of appropriate agents.

- Provide workshops on identification and use of biological control agents

- Serve as a communication channel between research and land managers regarding new technologies and monitoring methods.

- Provide technical assistance in training, site selection and evaluation, rearing methods, redistribution of biological control agents and monitoring.

- Evaluate and provide feedback on biological control program efficacy as well as strategy effectiveness.

- Assist in procuring funding necessary to continue biological control activities and to address research needs.

- Develop a programmatic call letter to inform land managers of the services FHP provides.

Research

Goal: FHP Staff, working with land managers, biological control practitioners and researchers, will identify important biological control research needs and interact with researchers from a variety of agencies to communicate research needs. FHP will assist research in developing programs to address these needs, offer technical support and assist in securing funding.

One challenge facing land managers is a comprehensive analysis of the "no action" alternative (what happens if invasive weeds are not managed) and of potential impacts of weed management tools. To address this need, research assessing risks, effectiveness and integration of biological strategies into existing weed management programs is needed.

FHP can offer researchers technical support in this effort from trained field entomologists, pathologists and field technicians. FHP may also have access to funding not available to researchers at large.

Strategic Actions: Research needs identified by FHP include

- Relationships of environmental effects (climate, site characteristics and plant community structure and composition) on biological control efficacy.

- Integration of biological control with restoration needs.

- Role of outbreak population levels of biological control agents in reducing target weed populations.

- Conceptual framework to develop comprehensive documentation that meets National Environmental Policy Act requirements leading to the development of a "how to" manual for writing weed management environmental analysis.

- Risk assessment strategies for non-target impacts of promising biological control agents; and impact of biological control agents on target invasive plants and populations, non-target flora and fauna, and overall ecosystem functions.

- Conceptual models that enable land managers to assess the efficacy of integrated weed management strategies.

- Understanding population genetics to identify the origin and diversity of invasive weed populations and to develop more efficient and effective weed management strategies.

- Continued identification, screening and introduction of potential biological control agents for use on existing and newly established non-native invasive plants.

FHP will facilitate communication between land managers, biological control practitioners and researchers about needs:

- Host meetings for land managers and biological control practitioners to communicate their needs and concerns directly to researchers.

- Attend meetings of local cooperative weed management areas to identify opportunities for collaborative efforts with research to address high priority problems.

- Attend scientific meetings to maintain a familiarity with accomplishments and trends in research and to identify opportunities for research on local needs.

- Identify research needs.

Monitoring

Goal: FHP Staff, working with biological control practitioners, partner agencies and private groups, facilitates effective monitoring of biological control agents and impacts, to ensure the most effective, scientifically-based management of invasive plant populations.

FHP will focus on providing education, training and technical assistance to all practitioners in the monitoring of their biological control program. FHP will ensure monitoring occurs of biological control release sites to improve the scientific-basis of the overall biological component of an integrated weed management program and to meet land managers needs.

Strategic Actions: FHP activities to promote monitoring will include:

- Emphasize the role of monitoring biological control agents in an effective weed management program through training and workshops.

- Facilitate the distribution of the most current monitoring forms.
- Provide training opportunities with researchers in sampling techniques.
- Encourage biological control practitioners to use databases of biological control releases to increase the scientific-basis of biological control.
- Help monitor biological control nursery sites that will be used to provide agents for multiple practitioners.
- Help monitor biological control release sites that support research and scientific advancements in the biological control program.
- Develop monitoring parameters needed to understand the role biological control plays in invasive species management.
- In cooperation with invasive species specialists, evaluate the current biological monitoring program for effectiveness. Explore possible programmatic shifts in monitoring authorities and responsibilities to ensure a more coordinated approach to invasive plant species management.

FHP Invasive Plants Biological Control Strategy Team

Tom Barbouletos – Forester, Boise FHP Field Office

Patty Bates – R1/R4 Forest Health Monitoring Coordinator, Missoula (editor)

Liz Hebertson – Plant Pathologist, Ogden FHP Field Office

Carl Jorgensen – Entomologist, Boise FHP Field Office

Lee Pederson – Entomologist, Coeur D'Alene FHP Field Office

Carol Randall – Entomologist, Coeur D'Alene FHP Field Office

Dwight Scarbrough – Entomologist, Boise FHP Field Office

Nancy Sturdevant – Entomologist, Missoula FHP Field Office

Janet Valle – R1/R4 Pesticide Coordinator, Ogden (chair)